

## PATENT ABSTRACTS OF JAPAN

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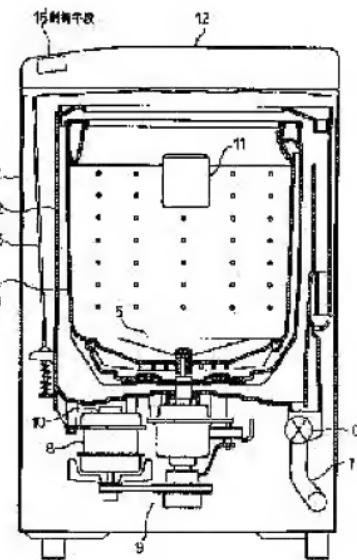
(21)Application number : **05-056743** (71) Applicant : **TOSHIBA CORP**  
 (22)Date of filing : **17.03.1993** (72)Inventor : **WADA MASAJI**

### (54) WASHING MACHINE

#### (57)Abstract:

**PURPOSE:** To enable a finishing agent to be made effective sufficiently by sufficiently removing a washing agent from a laundry through a longer rinsing at the time just before the last rinsing than the normal rinsing time carried out when a finishing agent course is selected, and thereby reducing the reaction of the washing agent on the finishing agent.

**CONSTITUTION:** A finishing agent container 11 is set at an upper part of an inner tab 4. The finishing agent in the container 11 is transferred in order through several chambers of the container in accordance with the sequence of washing, spin-drying, rinsing, etc., and at the time of last rinsing it is flowed into water in the tab 4. When a finishing agent course is selected by means of a finishing course selecting means, the rinsing just before the last rinsing is carried out for a longer time than the normal rinsing time. With such a constitution, the washing agent can be removed from the laundry sufficiently, and at the time of last rinsing the washing agent removal from the laundry is reduced so that the reaction of the washing agent on the finishin agent to be applied upon the last rinsing is reduced, thereby attaining a sufficient effect of the finishing



agent.

JAPANESE

[JP,06-269592,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION  
TECHNICAL PROBLEM MEANS OPERATION  
EXAMPLE DESCRIPTION DRAWINGS DRAWINGS

[Translation done.]

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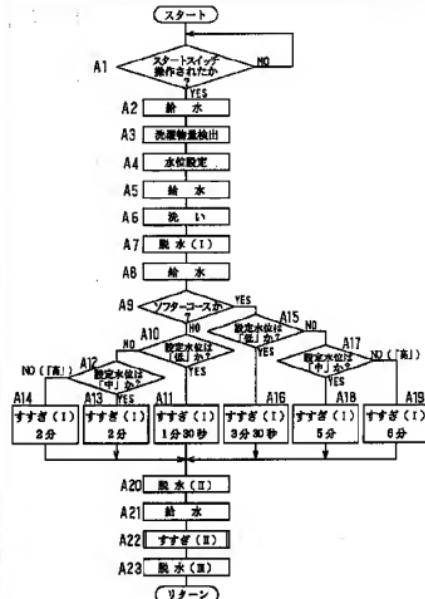
**CLAIMS**

[Claim(s)]

[Claim 1] In a thing which might make it have made it a finish agent flow into underwater [ in a tub ] at the time of a multiple-times deed and a rinse of the last round in a rinse, have a finish agent course selecting means after washing, and. A washing machine having a control means which carries out control which performs a rinse before a rinse of said last round time longer than standard rinse time when a finish agent course is chosen by the finish agent course selecting means.

[Claim 2] In a thing which might make it have made it a finish agent flow into underwater [ in a tub ] at the time of a multiple-times deed and a rinse of the last round in a rinse, have a finish agent course selecting means after washing, and. A washing machine having a control means which rinses said last round time longer than standard rinse time, and which carries out control when a finish agent course is chosen by the finish agent course selecting means.

Drawing selection Representative draw



[Translation done.]

[Claim 3] a water level can set up according to quantity of the washing -- about the set-up water -- the washing machine according to claim 1 or 2 characterized by making it change so long that a water level be high the time of a rinse which is boiled and is performed long time.

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[Translation done.]

JAPANESE

[JP,06-269592,A]

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

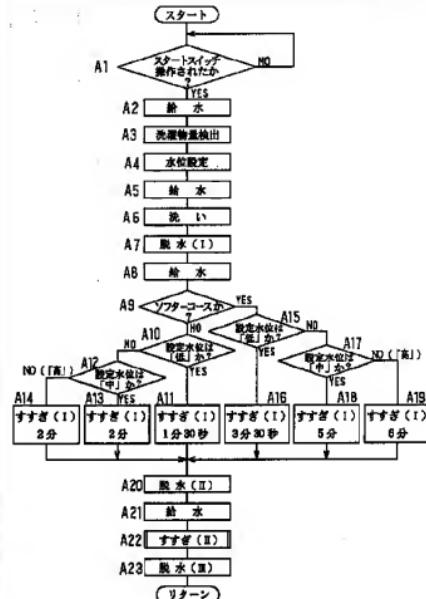
[Industrial Application] This invention relates to a washing machine suitable for use of a finish agent.

[0002]

[Description of the Prior Art] Conventionally, in the washing machine, the thing suitable for use of a finish agent is offered. This thing is what was shown, for example in JP,63-281698,A. A finish agent, for example, a flexible finish agent, is put in in the finish agent container with which the upper part in a tub was equipped, and it is washed. - It dries. - Rinse and with the advance like a Ta line when as -- by a centrifugal force or gravity flow. Transport to \*\* one by one from \*\* with two or more finish agent containers, and it is made to flow into underwater [in a tub] at the time of a rinse of the last round, and is made to function.

[0003] By stopping operation before a rinse of the last round as a different thing from it, and reporting at a buzzer etc.,

Drawing selection Representative draw



[Translation done.]

pouring of the finish agent by a user is closed if possible, and that to which it was made to carry out the new start of the operation after that is also offered.

[0004]Or the thing made the finish agent storing section provided in the upper part of the tub store a finish agent as a different thing, and carries out the opening operation of the electromagnetic valve, and it was made to make a finish agent flow in a tub from the above-mentioned finish agent storing section in the place where operation resulted in the rinse of the last round is also offered.

[0005]The deer was carried out, and a rinse of the last round and a rinse before it were set up and performed in standard rinse time (for example, about 2 minutes) also in these any.

[0006]

[Problem(s) to be Solved by the Invention]However, when a rinse before a rinse of the last round is performed in standard rinse time as mentioned above, a part for a detergent cannot fully be dropped from the washing, but a part for the left-behind detergent is dropped on subsequent rinse from it. Therefore, also at the time of a rinse of the last round, from the washing, a part for a detergent is dropped not a little, and it will react to the finish agent poured in at the time of a rinse of this last round, and will reduce the effect of a finish agent.

[0007]That is, a detergent has many surface-active agents of a negative ion system, and since a chemical reaction will be carried out to for example, the flexible finish agent of a positive ion system and a flexible finish agent will become an insoluble matter if this remains mostly, the washing also becomes the flexible finish effect is lost and soiled by the insoluble matter depending on the case.

[0008]Since a finish agent passes through penetration and the process in which it adheres to clothing after that, in water at first, before it adheres to clothing enough, it will require time. For this reason, when a rinse of the last round was performed in standard rinse time, it had the problem that a rinse will finish it as lack of time while a finish agent has not adhered to clothing enough.

[0009]There is so much appearance of a detergent that these have much quantity of the washing, and since that a finish agent adheres also takes time, they are in the tendency which becomes remarkable.

[0010]This invention is made in view of an above-mentioned situation, therefore in case the purpose uses a finish agent, it can fully acquire the finish effect, combines it, and is to provide the washing machine which can obtain it according to the quantity of the washing.

[0011]

[Means for Solving the Problem]To achieve the above objects, in a washing machine of this invention, When it is in a thing it might be made to have made it flow into underwater [ in a tub ] in a finish agent about a rinse at the time of a multiple-times deed and a rinse of the last round, it has a finish agent course selecting means and a finish agent course is chosen by that cause after washing, It was made to perform a rinse before a rinse of the above-mentioned last round time longer than standard rinse time.

[0012]In a washing machine of this invention, when a finish agent course was chosen, it was made to rinse the last round time longer than standard rinse time.

[0013]a water level can set up in these cases according to quantity of the washing -- about the set-up water -- it is good to make it change so long that a water level be high the time of a rinse which is boiled and is performed long time.

[0014]

[Function]When a finish agent course is chosen as the 1st according to the above-mentioned means, by having been made to perform a rinse before a rinse of the last round time longer than standard rinse time, A part for a detergent can fully be dropped on a rinse of the stage before resulting in a rinse of the last round from the washing over long time, In a rinse of the last round, the omission for the detergent from the washing can be lessened, the reaction for the detergent to the finish agent poured in at the time of a rinse of this last round can be lessened, and it may fully come to demonstrate the effect of a finish agent.

[0015]When a finish agent course is chosen as the 2nd, by having been made to rinse the last round time longer than standard rinse time, many hours can be spent on clothing, a finish agent can be made to adhere to it enough, and, therefore, it may fully come to demonstrate the effect of a finish agent also in this case.

[0016]In above-mentioned each case, a water level can set up the 3rd according to the quantity of the washing, about the set-up water -- by it having been alike, and having carried out for being alike so that the time of a rinse performed long time might be changed so long that a water level is high, Being able to rinse in time of the length according to the quantity of the washing, and more fully being able to perform adhesion of the omission for a detergent or a finish agent so much, and rinsing for a long time more than needed can also avoid now.

[0017]

[Example]Hereafter, it explains with reference to drawing 1 per 1st example of this invention thru/or drawing 6. The

outer packaging 1 of the whole washing machine is first shown in drawing 2, inside, it hangs, and elastic support is carried out with the stick mechanism 3, it allocates, and the agitator body 5 for wash is further allocated [ the outer tub 2 for / Mizutame ] for two or more sets (only a lot is illustrated) of porous inner lifts 4 which are laundry sink in the outer tub 2, and are also dehydration tacks in the inner lift 4 at the pars basilaris ossis occipitalis, respectively. Outside the outer tub 2, the drain valve 6 and the exhaust hose 7 for draining out of the outer tub 2 (inside of the inner lift 4) are allocated, and the drive mechanism 9 which makes the motor 8 a subject is allocated in the lower part. The inner lift 4 is controlled at the time of washing and a rinse, and he rotates the agitator body 5, and is trying to rotate the inner lift 4 with the agitator body 5 with this drive mechanism 9 at the time of drying.

The rotational frequency sensor 10 which detects the number of rotations of this motor 7 is allocated in the motor 7 of this drive mechanism 8.

[0018]In the case of this example, the upper part in the inner lift 4 is equipped with the finish agent container 11. This finish agent container 11 is what was shown in above-mentioned JP,63-281698,A, A finish agent, for example, a flexible finish agent, is put in in the finish agent container with which the upper part in a tub was equipped, and it is washed. - It dries. - Rinse and with the advance like a Ta line when as -- by a centrifugal force or gravity flow.

Transport to \*\* one by one from \*\* with two or more finish agent containers, and it is made to flow into underwater [ in a tub ] at the time of a rinse of the last round, and is made to function.

[0019]On the other hand, the top cover 12 is allocated on the outer packaging 1, and the navigational panel 13 shown in drawing 3 is formed in the anterior part upper surface of this top cover 12. In this navigational panel 13, "start / halt" switch 14a, The various operation switches 14 which made the start the "water level" selecting switch 14b, the distance selecting switch 14c, the "SOFUTA" course switch 14d, and the "course change" switch 14e consist, and. The various displays for indication 15 which made the start time and the number-of-times display for indication 15a, and the SOFUTA course display for indication 15b and the course display for indication 15c consist.

It is what makes by turns the selection of a course and selection release which use a finish agent (in this case, flexible finish agent) in it whenever it carries out pressing operation of the "SOFUTA" course switch 14d, It functions

as a finish agent course selecting means, and the SOFUTA course display for indication 15b displays the selection by luminescence.

Once it operates the switch 14d, it is memorized, whenever a "SOFUTA" course switches on a power supply, it may be made to be set up automatically, and the switch 14d is operated each time and it may be made to set it up.

[0020]And the microcomputer 16 is further allocated in the method of the inside of anterior part of the top cover 12.

This microcomputer 16 is what functions as a water level setting means and a control means, As shown in drawing 4, various switch signals are inputted from the various operation switches 14 of the above-mentioned navigational panel 13, and a water-level-detection signal is inputted from the water level sensor 17 which detects the water level in said outer tub 2, and also a revolution-rate-detection signal is inputted from said rotational frequency sensor 10.

[0021]And based on the control program beforehand memorized by those input lists the microcomputer 16, A driving control signal is given to the various displays for indication 15 of the above-mentioned navigational panel 13, the feed valve 18 which supplies water in said inner lift 4 (inside of the outer tub 2) and the motor 8 of said drive mechanism 9, and the drive circuit 19 that drives the drain valve 6.

[0022]So, below, the operation based on the function of the above-mentioned microcomputer 16 is described. As shown in drawing 1, the microcomputer 16 judges whether the "start" switch 14a was operated by the beginning which required electric power was supplied and started the operation (start) (Step A1).

[0023]At this step A1, if the "start" switch 14a is judged to be operation \*\*\*\* next, the feed water to predetermined water level which made the feed valve 18 open wide and was suitable for detecting the amount of washing in the inner lift 3 will be carried out (Step A2), and detection of the amount of washing will be carried out after that (step A3). Detection of this amount of washing is what is performed by detecting the number of rotations of that motor 8 when carrying out predetermined time energization at the motor 8 of the drive mechanism 9 and rotating the agitator body 5 with the rotational frequency sensor 10, Since the burden of the motor 8 becomes large and that number of rotations decreases so that there are many amounts of washing, detection of the amount of washing can be performed by detecting this number of rotations.

[0024]Subsequently, about [ suitable for the amount of

detection washing / washing and rinse-water ] is set up (step A4), after that, the feed valve 18 is made to open wide again, and feed water to setting water level is carried out (step A5). And perform washing by controlling the inner lift 4 and rotating the agitator body 5 (Step A6), perform 1st drying by rotating the inner lift 4 with the agitator body 5 further (Step A7), the feed valve 18 is made to open wide further, and feed water to setting water level is carried out (Step A8).

[0025]Then, if it judges whether there was any selection of the "SOFUTA" course by the "SOFUTA" course switch 14d (step A9) and it is judged that there was nothing next, it will be judged whether setting water level is "low" (Step A10). If it is judged at this step A10 that setting water level is "low", the 1st rinse will be performed by the length for 1 minute and 30 seconds of a standard (Step A11). If it judges whether setting water level will be "inside" if it is judged that setting water level is not "low" (Step A12) and it is judged that it is "inside", the 1st rinse will be performed by the length for 2 minutes of the standard in this case (Step A13). If it is judged at Step A12 that setting water level is not "inside", since setting water level is "quantity", it will perform the 1st rinse by the length for 2 minutes of the standard in this case (Step A14).

[0026]On the other hand, if it is judged by step A9 that there was selection of a "SOFUTA" course, also in this case -- first -- setting water level -- "-- judging whether it is low" (Step A15) -- "-- if it is judged that it is low", the 1st rinse will be performed by the length for 3 minutes and 30 seconds 2 minutes longer than standard rinse time (Step A16). If it judges whether setting water level will be "inside" if it is judged that setting water level is not "low" (Step A17) and it is judged that it is "inside", the 1st rinse will be performed by the length for 5 minutes, 3 minutes longer than the standard rinse time in this case (Step A18). If it is judged at Step A17 that setting water level is not "inside", since setting water level is "quantity", it will perform the 1st rinse by the length for 6 minutes, 4 minutes longer than the standard rinse time in this case (Step A19).

Drawing 5 expresses the time of the rinse in each of these cases, respectively.

[0027]A deer is carried out, after that, 2nd drying is performed also in which case (Step A20), further, feed water to setting water level is performed (Step S21), and the 2nd rinse (last round) is performed by a standard hour like Steps A10-A14 (Step A22). At the time of this 2nd rinse, by pouring the finish agent into the finish agent container 11 from start-up before, that finish agent flows into underwater

[ in the inner lift 3 ], and functions. 3rd drying (last round) is performed after this rinse (Step A23), and operation is ended.

[0028]Thus, when the "SOFUTA" course which is a finish agent course is chosen in the thing of this composition, Are made to perform each of 1st rinse that is a rinse before the 2nd rinse that is a rinse of the last round time longer than standard rinse time, and by it. Since a part for a detergent can fully be dropped on a rinse of the stage before resulting in a rinse of the last round from the washing over long time, In a rinse of the last round, the omission for the detergent from the washing can be lessened, the reaction for the detergent to the finish agent poured in at the time of a rinse of this last round can be lessened, and the effect of a finish agent can fully be acquired.

[0029]moreover -- in the case of the thing of this composition, a water level can set up according to the quantity of the washing -- about the set-up water -- it being alike, the time of the 1st rinse performed long time being carried out for being alike so that it may be made to differ so long that a water level be high, and by it. It can rinse in time of the length according to the quantity of the washing, the omission for a detergent is more fully made so much, and the effect of a finish agent can also be acquired more certainly. When there is little especially quantity of the washing, it can also avoid rinsing for a long time more than needed.

[0030]Drawing 6 expresses the relation between the time of a rinse, and the detergent emission rate from the washing, and the emission rate of the detergent from the washing increases, so that from this drawing 6 and time of a rinse is lengthened.

[0031]To the above, drawing 7 thru/or drawing 9 show the 2nd example of this invention, and shows what is not the 1st rinse and was made to perform extension of rinse time about the 2nd rinse (last round).

[0032]Namely, after passing through the same steps B1-B8 as Steps A1-A8 in the case of this thing, The 1st rinse is performed by a standard hour like Steps A10-A14 (Step B9), Then, after performing 2nd drying (Step B10) and performing feed water to setting water level further (Step B11), it is made to judge whether there was any selection of the "SOFUTA" course by the "SOFUTA" course switch 14d (Step B12).

[0033]Carry out a deer and from the above-mentioned step B12 Step B22, If it is the same as that even of Step A19 and there is no selection of a "SOFUTA" course from previous

step A9, When setting water level is "low", a rinse which is the 2nd time is performed by the length for 1 minute and 30 seconds of a standard (Step B14), In an "inner" case, the 2nd rinse is performed by the length for 2 minutes of a standard (Step B16), If in the case of "quantity" the 2nd rinse is performed by the length for 2 minutes of a standard (Step B17) and there is selection of a "SOFUTA" course on the other hand, When setting water level is "low", a rinse which is the 2nd time is performed by the length for 3 minutes and 30 seconds 2 minutes longer than standard rinse time (Step B19), performing the 2nd rinse by the length for 5 minutes, 3 minutes longer than standard rinse time, in an "inner" case (Step B21) -- furthermore -- "-- in high", the 2nd rinse is performed by the length for 6 minutes, 4 minutes longer than standard rinse time (Step B22) -- it is made like.

Drawing 8 expresses the time of the rinse in each of these cases, respectively.

[0034]Like the above-mentioned, by pouring the finish agent into the finish agent container 11 from start-up before, that finish agent flows into underwater [ in the inner lift 3 ], and functions at the time of this 2nd rinse. 3rd drying (last round) is performed after this rinse (Step B23), and operation is ended.

[0035]Since it is made to rinse the last round time longer than standard rinse time, and many hours can be spent on clothing and a finish agent can be made to adhere to it enough by it when a finish agent course is chosen in short in the case of this thing, Also in this case, the effect of a finish agent fully comes to be acquired.

[0036]moreover -- also in this thing, a water level can set up according to the quantity of the washing -- about that set-up water -- it being alike, that time of the 2nd rinse performed long time being carried out for being alike so that it may be made to differ so long that a water level be high, and by it. It can rinse in time of the length according to the quantity of the washing, adhesion of a finish agent can more fully be performed so much, and the effect of a finish agent can also be acquired more certainly. When there is little especially quantity of the washing, it can also avoid rinsing for a long time more than needed.

[0037]Drawing 9 expresses the relation between the time of a rinse, and the deposit efficiency over the washing of a flexible finish agent, and its deposit efficiency of the flexible finish agent to the washing increases, so that from this drawing 9 and it lengthens time of a rinse.

[0038]a rinse which a rinse does not come out twice, may be made to perform it 3 times or more, and is performed time

longer than standard rinse time before a rinse of the last round in that case may be the any 1 time or multiple times, or all the times. As mentioned above, pouring of a finish agent is not based on the finish agent container 11, but stops operation before a rinse of the last round, may make it make it pour it in by a user, and it is further stored in the finish agent storing section provided in the upper part of the tub, It may be made to make it flow in a tub by carrying out the opening operation of the electromagnetic valve in the place where operation resulted in the rinse of the last round.

Setting out of the water level according to the quantity of the washing is not an automatic chisel by the microcomputer 16, and what is performed by manual operation by the "water level" selecting switch 14b includes it.

[0039]In addition, within limits which are not limited only to the example which was described above and shown in the drawing, and do not deviate from a gist, this invention is changed suitably and can be carried out.

[0040]

[Effect of the Invention]The washing machine of this invention is a thing as explained above, and does the following effect so. In the thing which might make it have made it 1st a finish agent flow into underwater [ in a tub ] after washing at the time of a multiple-times deed and a rinse of the last round in a rinse, When it has a finish agent course selecting means and a finish agent course is chosen by that cause, By having been made to perform a rinse before a rinse of the above-mentioned last round time longer than standard rinse time, Since a part for a detergent can fully be dropped on a rinse of the stage before resulting in a rinse of the last round from the washing over long time and the omission for the detergent from the washing can be lessened in a rinse of the last round, The reaction for the detergent to the finish agent poured in at the time of a rinse of this last round can be lessened, and the effect of a finish agent can fully be acquired.

[0041]When a finish agent course is chosen as the 2nd, by having been made to rinse the last round time longer than standard rinse time, many hours can be spent on clothing, a finish agent can be made to adhere to it enough, and, therefore, the effect of a finish agent can fully be acquired also in this case.

[0042]a water level can set [ 3rd ] up according to the quantity of the washing -- about the set-up water -- by it being alike and having made it change the time of a rinse performed long time so long that a water level be high, It is also avoidable to be able to rinse in time of the length according to the quantity of the washing, and to be more

fully able to perform adhesion of the omission for a detergent or a finish agent so much, and to rinse for a long time more than needed.

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[Translation done.]

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JAPANESE

[JP,06-269592,A]

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**DESCRIPTION OF DRAWINGS**

[Brief Description of the Drawings]

[Drawing 1] The flow chart for operation explanation which shows the 1st example of this invention

[Drawing 2] The whole fracture side view

[Drawing 3] The top view of a navigational panel

[Drawing 4] Outline electrical-and-electric-equipment lineblock diagram

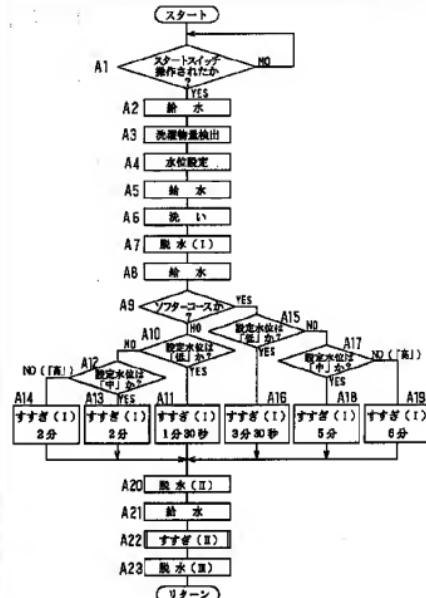
[Drawing 5] The figure which expresses the time of the 1st rinse a course exception and according to setting water level

[Drawing 6] The figure showing the relation between the time of a rinse, and the detergent emission rate from the washing

[Drawing 7] The drawing 1 equivalent figure showing the 2nd example of this invention

[Drawing 8] the time of the 2nd rinse (last round) -- a course exception and setting water level -- the figure which expresses independently

Drawing selection Representative draw



[Translation done.]

[Drawing 9]The figure showing the relation between the time of a rinse, and the deposit efficiency over the washing of a flexible finish agent

[Description of Notations]

A finish agent container and 14b show a "water level" selecting switch, 14 d of "SOFUTA" course switches (finish agent course selecting means) are shown, and, as for an inner lift (tub) and 11, 4 shows a microcomputer (a water level setting means, control means) 16.

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[Translation done.]

JAPANESE

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## DRAWINGS

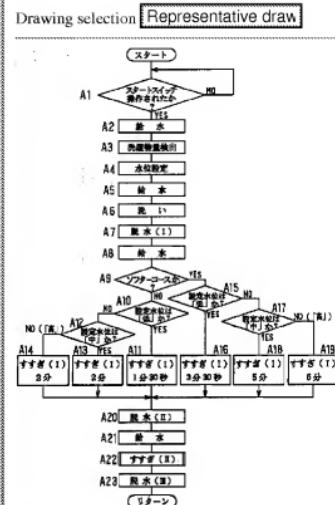
[Drawing 5]

水位 すすき山	低	中	高
標準	1' 30"	2'	2'
ソフテー コース	+ 2'	+ 3'	+ 4'

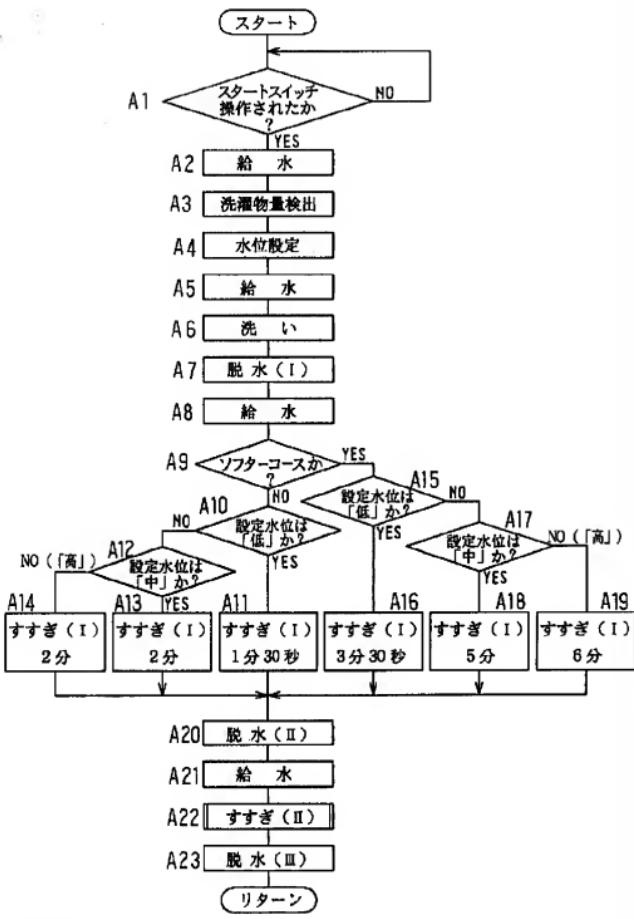
### Drawing 8

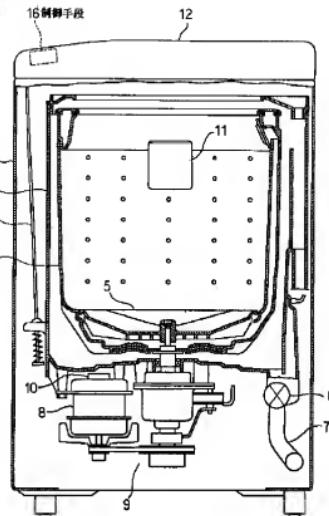
水位 すすき	低	中	高
標準	1' 30"	2'	2'
ソフテー コース	+ 2'	+ 3'	+ 4'

### Drawing 1

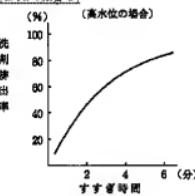


[Translation done.]

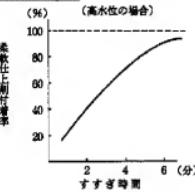
[Drawing 2]



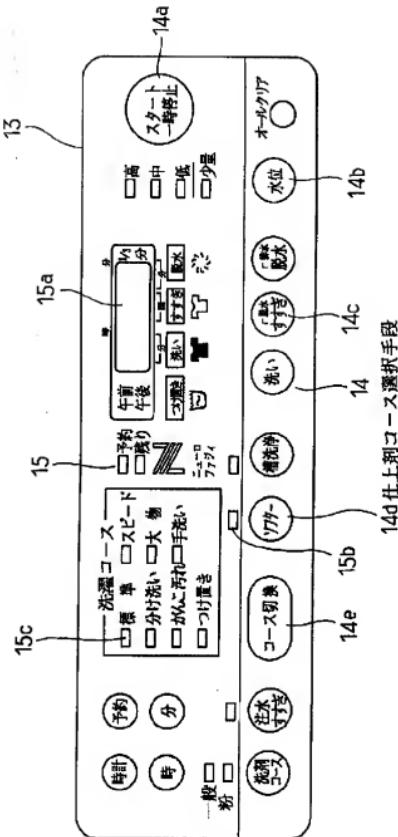
[Drawing 6]



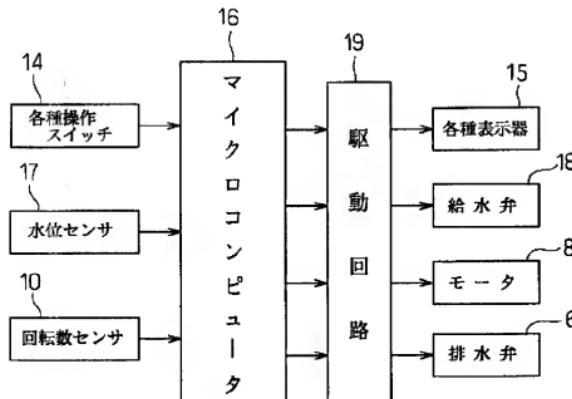
[Drawing 9]



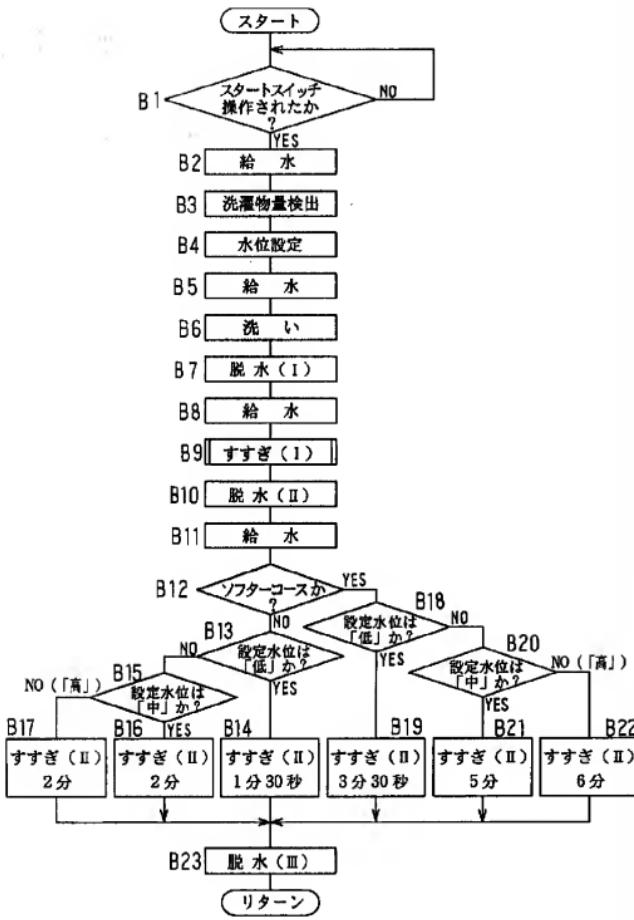
[Drawing 3]



#### [Drawing 4]



[Drawing 7]



[Translation done.]